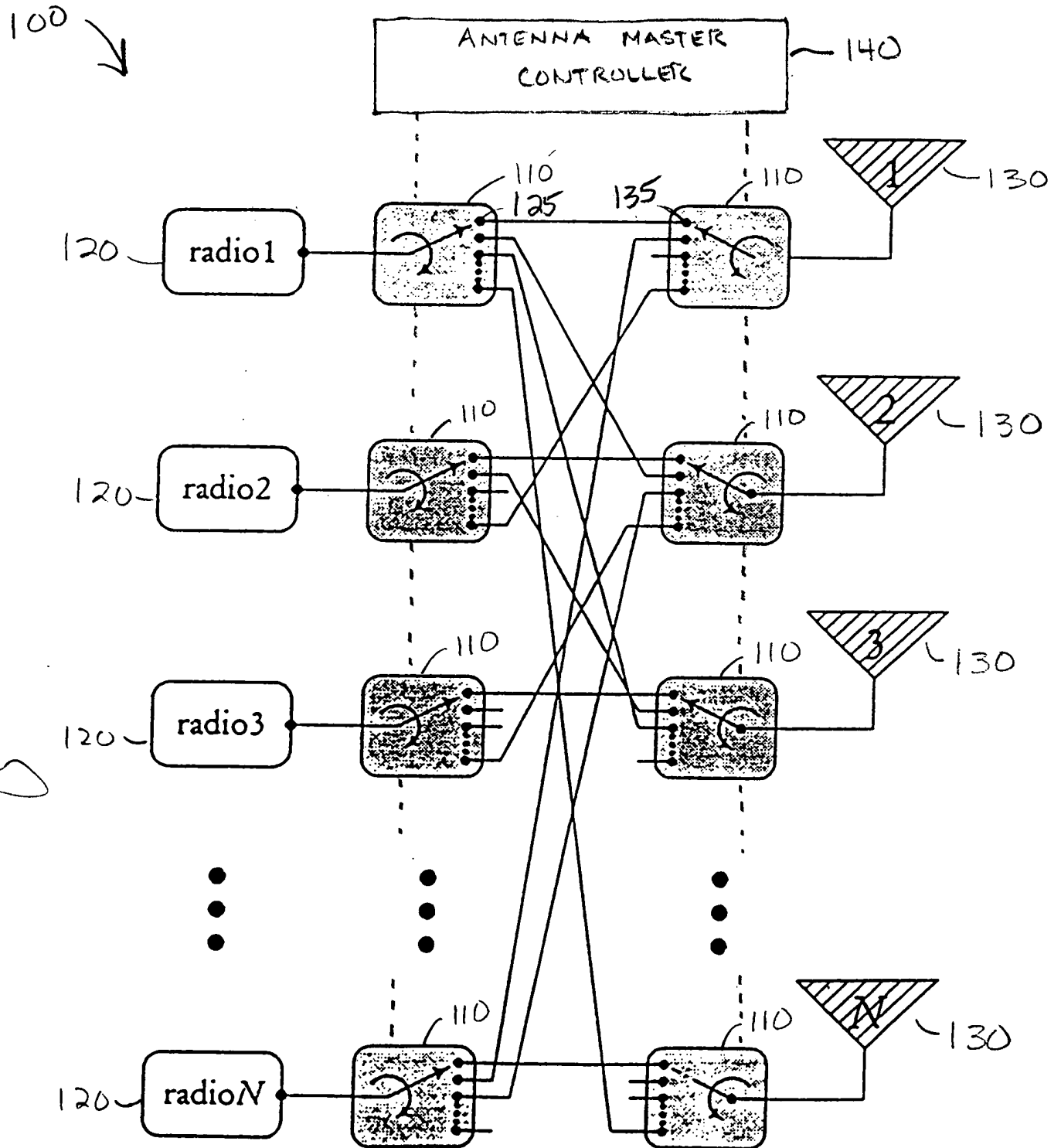


Figure 1



Switching State	Connection1	Connection2	Connection3	Connection <i>k</i>	...	Connection <i>N</i>
1	$1 \Leftrightarrow 1$	$2 \Leftrightarrow 2$	$3 \Leftrightarrow 3$	$k \Leftrightarrow k$	...	$N \Leftrightarrow N$
2	$1 \Leftrightarrow 2$	$2 \Leftrightarrow 3$	$3 \Leftrightarrow 4$	$k \Leftrightarrow k_N + 1$	...	$N \Leftrightarrow 1$
3	$1 \Leftrightarrow 3$	$2 \Leftrightarrow 4$	$3 \Leftrightarrow 5$	$k \Leftrightarrow k_N + 2$	...	$N \Leftrightarrow 2$
<i>j</i>	$1 \Leftrightarrow j$	$2 \Leftrightarrow j_N + 1$	$3 \Leftrightarrow j_N + 2$	$k \Leftrightarrow j_N + k_N - 1$	...	$N \Leftrightarrow j - 1$
⋮	⋮	⋮	⋮	⋮	⋮	⋮
<i>N</i>	$1 \Leftrightarrow N$	$2 \Leftrightarrow 1$	$3 \Leftrightarrow 2$	$k \Leftrightarrow k - 1$	...	$N \Leftrightarrow (N - 1)$

FIGURE 2

Switching State	Switch Positions					Connection1	Connection2	Connection3
1	R1	1	2	A1		$1 \Leftrightarrow 2$	$2 \Leftrightarrow 1$	$3 \Leftrightarrow 3$
	R2	2	1	A2				
	R3	3	3	A3				
2	R1	3	3	A1		$2 \Leftrightarrow 2$	$3 \Leftrightarrow 1$	$1 \Leftrightarrow 3$
	R2	1	3	A2				
	R3	1	1	A3				
3	R1	2	1	A1		$3 \Leftrightarrow 2$	$1 \Leftrightarrow 1$	$2 \Leftrightarrow 3$
	R2	3	2	A2				
	R3	2	2	A3				

FIGURE 7

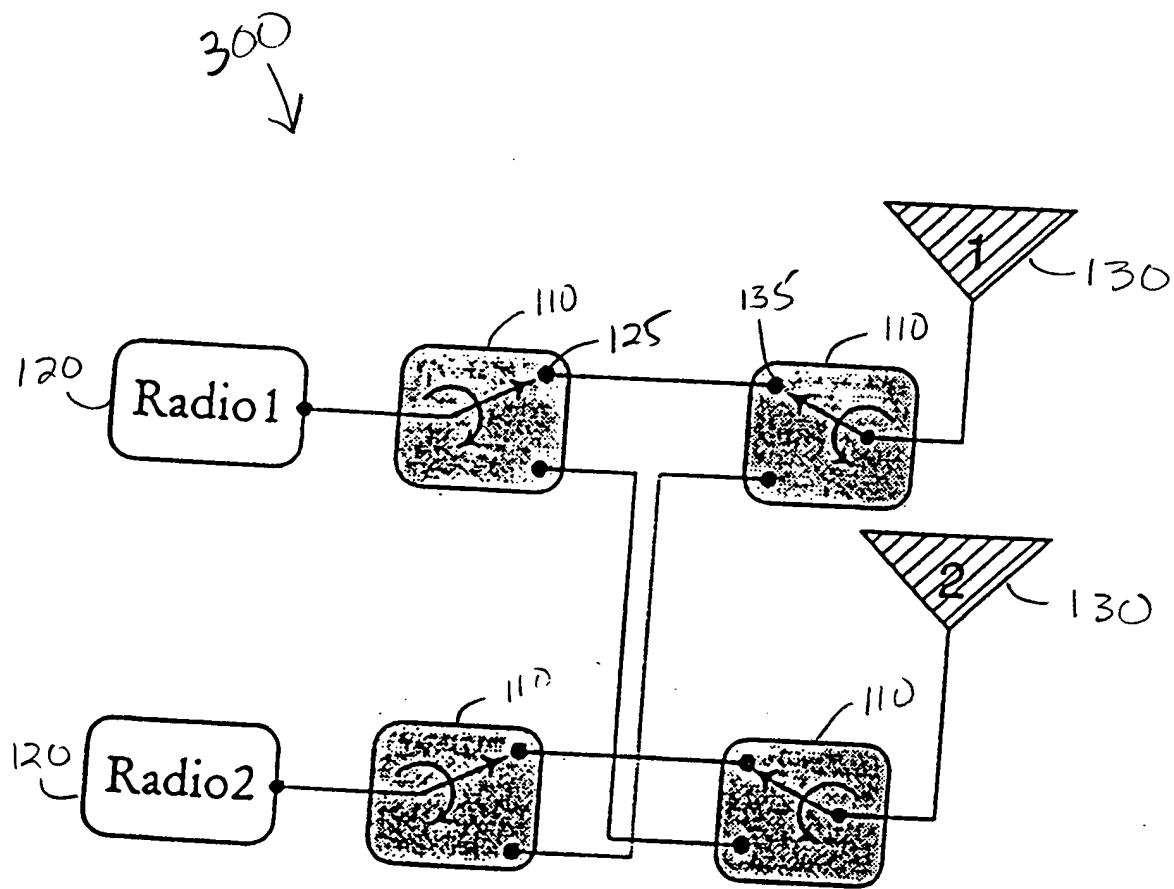
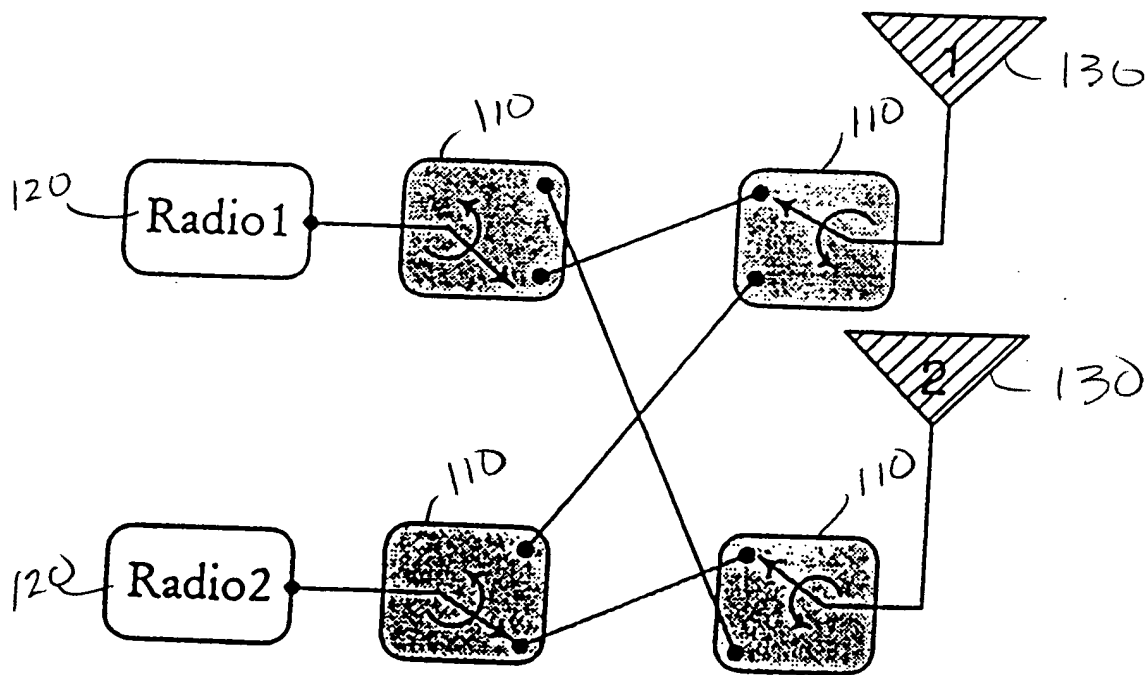


Figure 3

Figure 4

400



500
✓

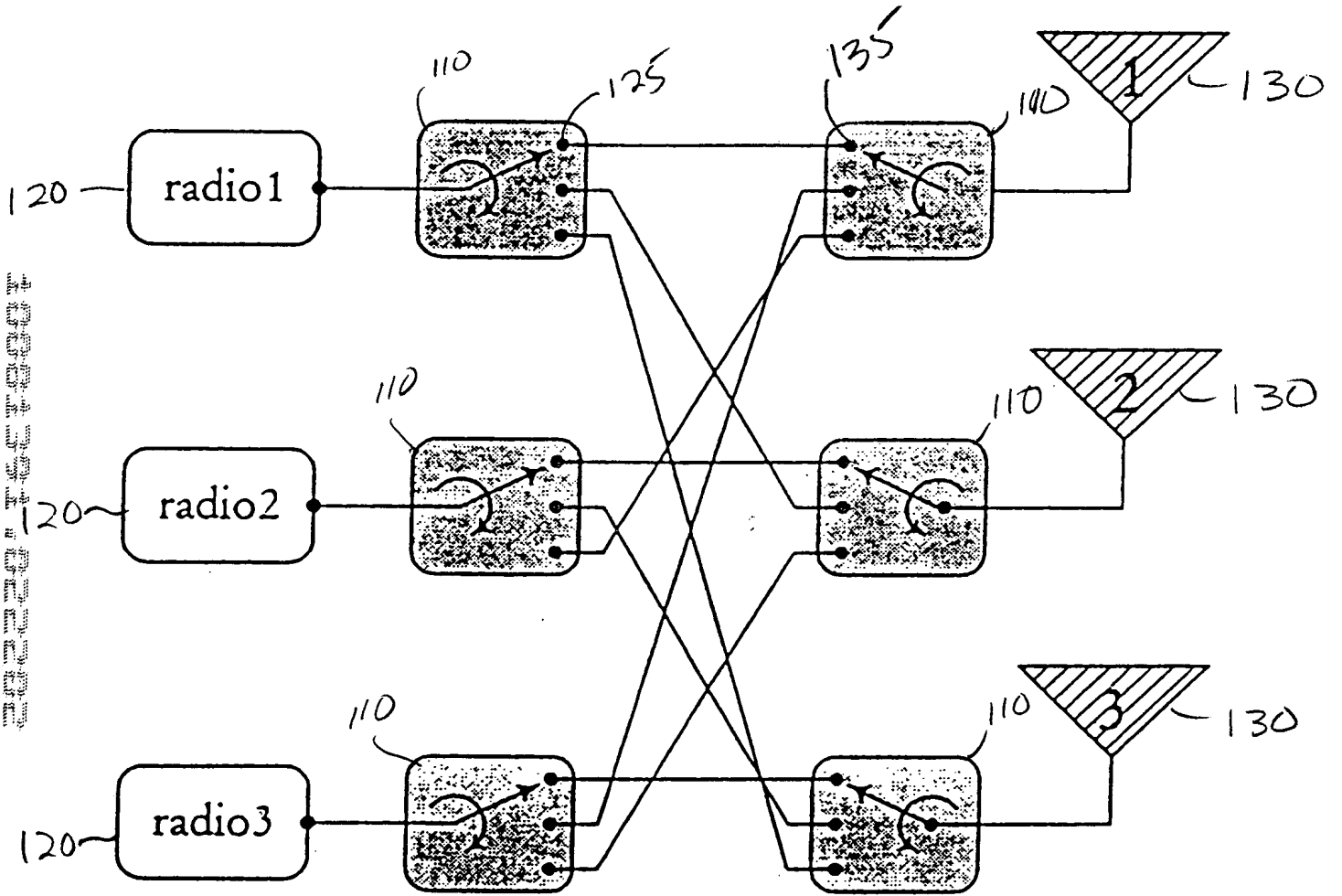
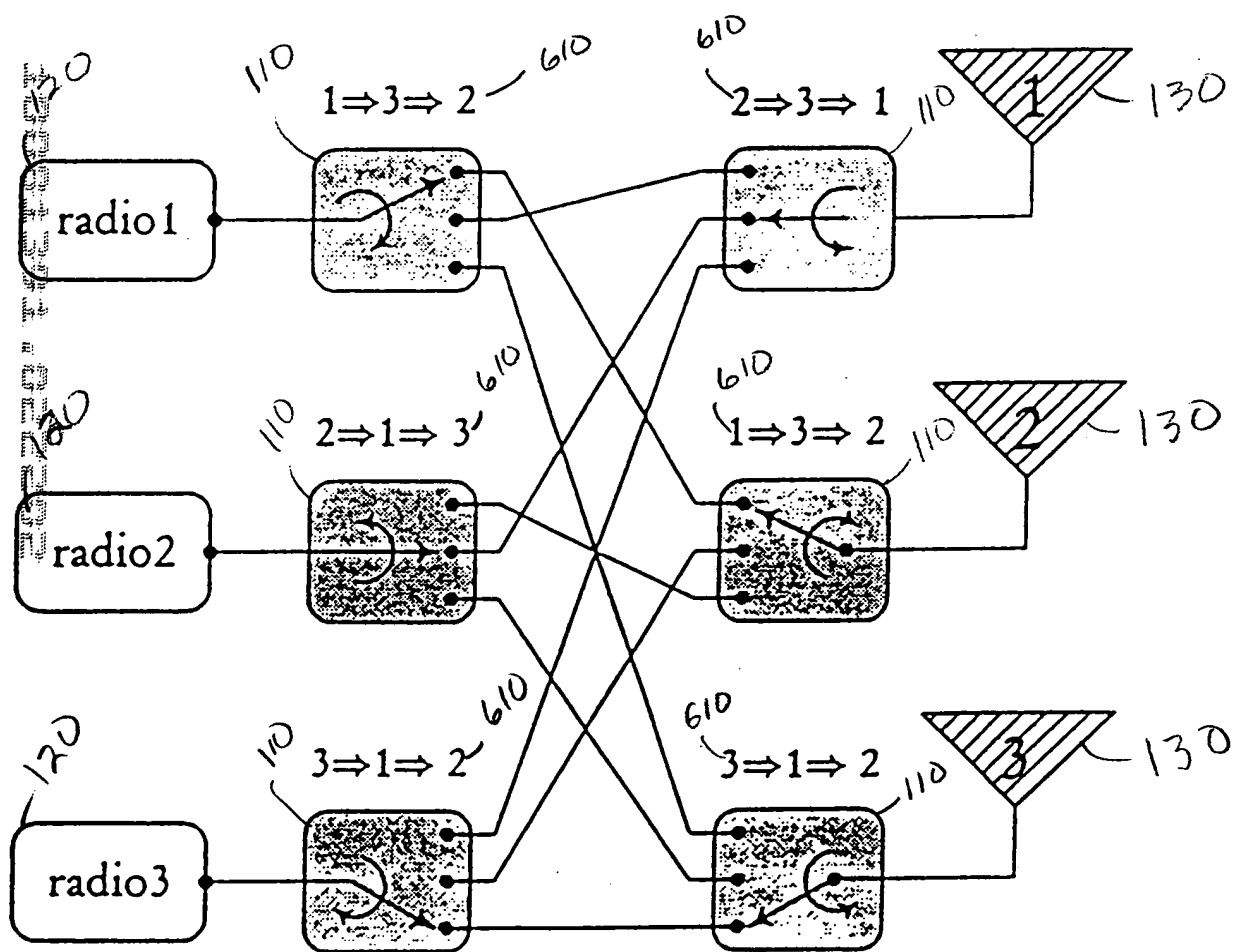


Figure 5

Figure 6

600



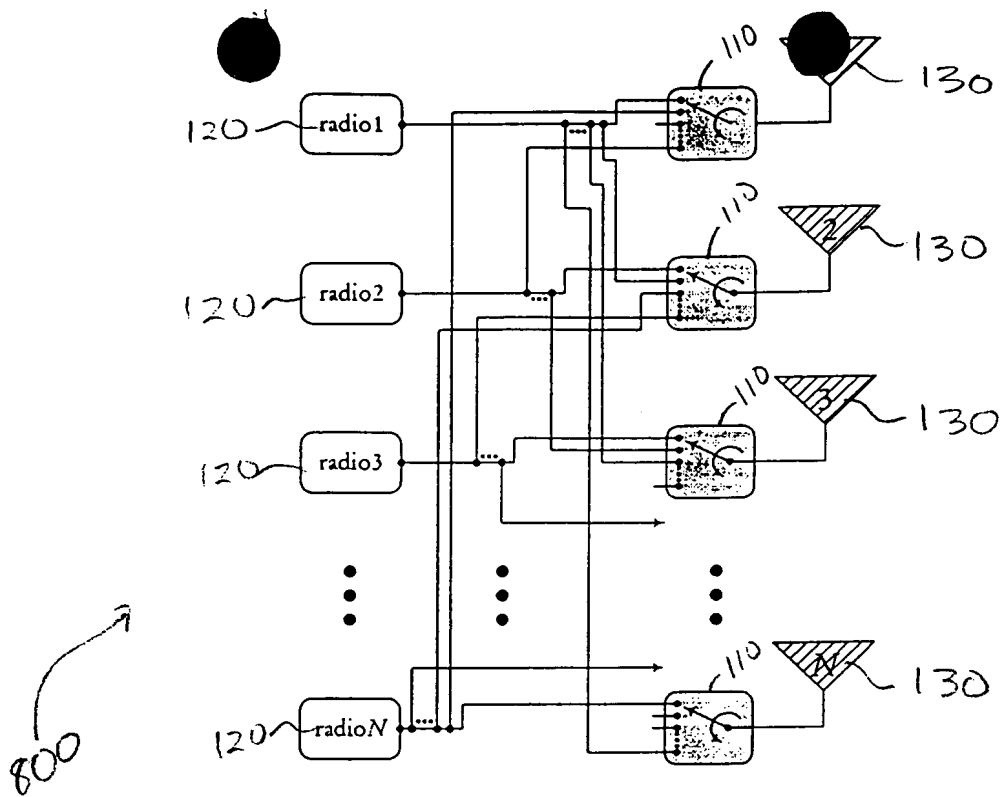


Figure 8

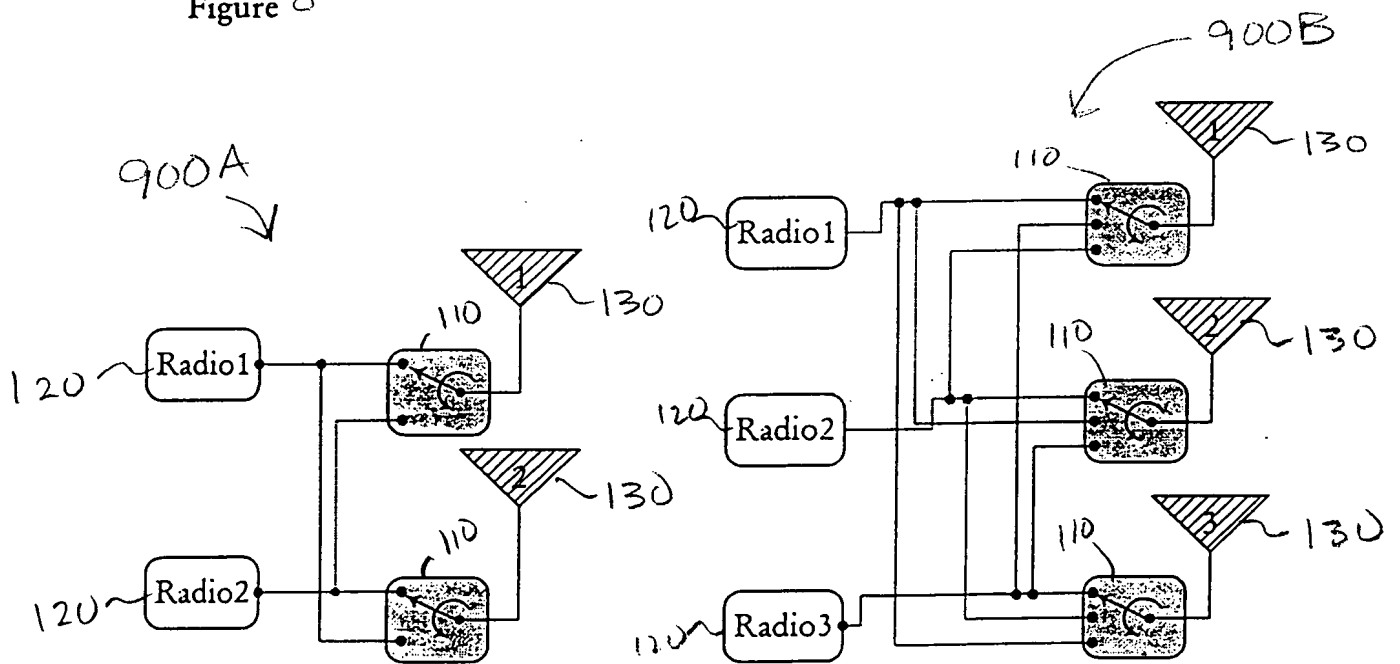
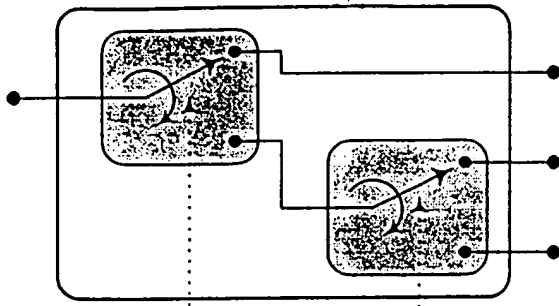


Figure 9A

Figure 9B

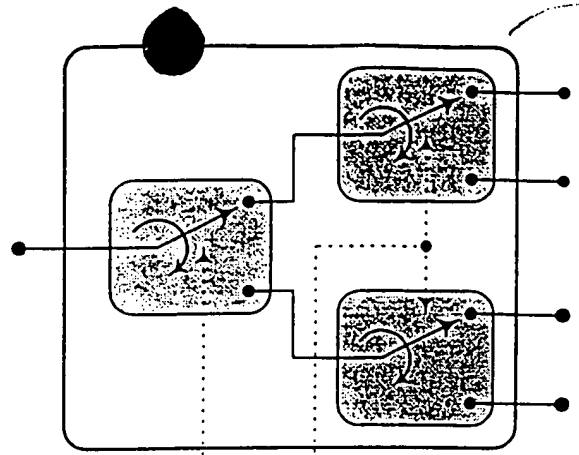
1000A
↘



2-bit control

Figure 10A

1000B



2-bit control

Figure 10B